AMENDMENTS TO THE CLAIMS

1. (currently amended) A method of determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the method comprising for at least one pair of wheels:

(a) determining front and rear wheel speed signals (w) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

(b) correlating the front and rear wheel speed signals (w) based on a velocity-compensated correlation function (R) in which a velocity dependency is compensated with the wheel speed signal (w) of the front or the rear wheel such that a correlation feature remains unchanged with varying vehicle velocity (v) but changes with varying wheel radius (r) of the respective wheel, wherein the ~~in order to determine a specific~~ correlation feature is indicative of the wheel radius (r) of the respective front wheel or rear wheel ~~time delay (t) between the front wheel and rear wheel speed signals~~; and

(c) determining the velocity (v) of the vehicle based on said indicated wheel radius (r) and the wheel speed signal (w) of the respective front and rear wheel ~~correlation feature and the wheel spacing (B)~~.

2. (cancelled)

3. (cancelled)

4. (currently amended) The method of claim 13, wherein ~~the action of correlating is based on a correlation function (R) of the front and rear wheel speed signals~~, said correlation function (R) is a function of the reciprocal ($1/w\,r$)) of the product ($w\,r$) of the known wheel speed signal (w) and the respective unknown wheel radius (r), and the correlation feature is the specific wheel radius (f) which corresponds to the maximum of the correlation function (R), whereby the vehicle velocity (v) is computed from the specific wheel radius (r_f) and the corresponding wheel speed signal (w).

5. (currently amended) A method of determining the velocity (v) of a vehicle having at least one pair of a front and a rear ~~wheel~~ wheels which are spaced by a wheel spacing (B), the method comprising for at lease one pair of wheels:

(a) determining front and rear wheel speed signals (*w*) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

(b) correlating the front and rear wheel speed signals (*w*) in order to determine a specific correlation feature indicative of the time delay (*τ*) between the front wheel and rear wheel signals, wherein the correlation feature is obtained by

aa) Fourier transforming the wheel speed signals (*w*) to obtain Fourier transformed wheel speed signals (Ω);

bb) calculating a phase function ($\arg(\Omega_1(f)/\Omega_3(f))$) of the ratio of the Fourier transformed wheel speed signals (Ω) of the front and the rear wheel, wherein the slope of said phase function is the correlation feature indicative of the time delay (τ);

(c) determining the velocity (v) of the vehicle based on the indicated time delay (*τ*) ~~said correlation feature~~ and the wheel spacing (*B*).

6. (previously presented) The method of claim 5, wherein the front and rear wheel speed signals (*w*) are transformed from angle domain to time domain by interpolation without aliasing effects.

7. (previously presented) The method of claim 5, wherein the action of correlating is based on the reciprocals of the wheel speed signals (1/*w*) to perform the action of correlating within the angle domain.

8. (currently amended) The method of claim 1, wherein the radii of the front and the rear wheels (*r*) are determined on the basis of the obtained vehicle velocity (*v*).

9. (previously presented) The method of claim 1, wherein the wheel speed signals (*w*) are provided by wheel speed sensors of an antilock braking system (ABS).

10. (currently amended) The method of claim 8, wherein the ~~absolute~~ wheel radii thus determined are used for tire pressure determination.

11. (currently amended) The method of claim 1, wherein the ~~absolute~~ velocity thus determined is used for road-friction monitoring.

12. (currently amended) The method of claim 1, wherein the ~~absolute~~ velocity thus determined is used as input for control systems ~~such as ABS, dynamic stability systems, traction control systems, anti-spin systems and AWD/SWD vehicles~~.

13. (currently amended) A system for determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the system comprising:

(a) wheel speed sensors arranged to provide front and rear wheel speed signals (w) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

(b) a correlation unit arranged to correlate the front and rear wheel speed signals (w) based on a velocity-compensated with the wheel speed signal (w) of the front or the rear wheel such that a correlation feature remains unchanged with varying vehicle velocity (v) but changes with varying wheel radius (r) of the respective wheel, wherein the ~~in order to determine a specific correlation~~ feature is indicative of the wheel radius (r) of the respective front wheel or rear wheel ~~time delay (t) between the front wheel and rear wheel speed signals~~; and to determine the velocity (v) of the vehicle based on the indicated wheel radius (r) and the wheel speed signal (w) of the respective front or rear wheel ~~wheel spacing (B) and the correlation feature thus determined~~

14. (currently amended) A computer program product including program code for carrying out a method, when executed on a processing system, of determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the program code being arranged to:

(a) determine front and rear wheel speed signals (w) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

(b) correlate the front and rear wheel speed signals (w) based on a velocity-compensated correlation function (R) in which a velocity dependency is compensated with the wheel speed signal (w) of the front or the rear wheel such that a correlation feature remains unchanged with varying vehicle velocity (v) but changes with varying wheel radius (r) of the respective wheel, wherein the ~~in order to determine a specific~~ correlation feature is indicative of the wheel radius (r) of the respective front wheel or rear wheel ~~time delay (τ) between the front wheel and rear wheel speed signals~~; and

(c) determine the velocity (v) of the vehicle based on said indicated wheel radius (r) and the wheel speed signal (w) of the respective front or rear wheel ~~correlation feature and the wheel spacing (B)~~.

15. (currently amended) The method of claim 9, wherein the ~~absolute~~ wheel radii thus determined are used for tire pressure determination.

16. (new) A system for determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B) the system comprising:

(a) wheel speed sensors arranged to provide front and rear wheel speed signals (w) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

(b) a correlation unit arranged to correlate the front and rear wheel speed signals (w) in order to determine a specific correlation feature indicative of the time delay (τ) between the front wheel and rear wheel speed signals, wherein the correlation feature is obtained by Fourier transforming the wheel speed signals (w) to obtain Fourier transformed wheel speed signals (Ω) and calculating a phase function ($\arg(\Omega_1(f)/\Omega_3(f))$) of the ratio of the Fourier transformed wheel speed signals (Ω) of the front and the rear wheel, wherein the slope of said phase

function is the correlation feature indicative of the time delay (τ) and arranged to determine the velocity (v) of the vehicle based on the indicated wheel radius (r) and the wheel speed signal (w) of the respective front or rear wheel.

17. (new) A computer program product including program code for carrying out a method, when executed on a processing system, of determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the program code being arranged to:

(a) determine front and rear wheel speed signals (w) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

(b) correlate the front and rear wheel speed signals (w) in order to determine a specific correlation feature indicative of the time delay (τ) between the front wheel and rear wheel speed signals, wherein the correlation feature is obtained by

aa) Fourier transforming the wheel speed signals (w) to obtain Fourier transformed wheel speed signals (Ω);

bb) calculating a phase function (arg ($\Omega_1(f)/\Omega_3(f)$)) of the ratio of the Fourier transformed wheel speed signals (Ω) of the front and the rear wheel, wherein the slope of said phase function is the correlation feature indicative of the time delay (τ); and

(c) determine the velocity (v) of the vehicle based on the indicated time delay (τ) and the wheel spacing (B).

18. (new) The method of claim 2, wherein the correlation function (R) reads

$$R_{1\,4}(x) = E[(w_1(t))(w_4(t-x/w_1(t))-E(w_2(t-x/w_1(t))))]$$

$$with\ x = B/r_1$$

and whereby

B is the spacing between the axles of the front and the rear wheel,

$w_1(t)$ is the velocity of the front-left wheel,

$w_3(t)$ is the velocity of the rear-left wheel,

r_1 is the radius of the front-left wheel, and

E denotes the expectation value.

19. (new) The method of claim 3, wherein an estimation value (r_1) for the wheel radius of the front-left wheel is obtained from the equation $r_1=arg\ maxR_{13}(B/r)$ and wherein the vehicle velocity at this wheel is obtained based on this wheel radius estimation value (r_1) and the corresponding wheel speed $(w_1(t))$.